

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1.-9. (Cancelled)

10. (Currently Amended) A calender for calendering a web of paper or board comprising
a top variable-crown roll;

a bottom variable-crown roll;

at least one intermediate roll positioned between said top roll and said bottom roll, wherein
said top roll, said bottom roll and said at least one intermediate roll are ~~[being]~~
disposed in a vertical stack such that the rolls may be brought into nip contact with
adjacent rolls to form a nip during calendering;

bearing blocks in which said rolls are mounted;

a frame;

mounts to which said bearing blocks of said at least one intermediate roll are connected,
wherein said mounts of said at least one intermediate roll are ~~[being]~~ slidably
connected to guides in said frame; and

a plurality of actuator means, wherein each of said plural actuator means is positioned
between at least one of said mounts and said bearing blocks of two adjacent rolls,
wherein each of said actuator means is adapted ~~[operable]~~ to relieve the linear loading
of the nip between said adjacent rolls ~~[loading imposed]~~ caused by the weight of ~~[said]~~
the rolls ~~[and auxiliary means], [the auxiliary means comprising said]~~ bearing blocks,
[said] mounts, and any other ~~[said]~~ actuator means located above the actuator means in
said vertical stack.

11. (Currently Amended) The calender of claim 10, wherein at least one of said plural
actuator means comprises a spring.

12. (Currently Amended) The calender of claim 10, wherein at least one of said plural actuator means comprises a hydraulic cylinder

13. (Currently Amended) The calender of claim 10 [~~11~~], wherein said plural actuator means comprises at least one spring and at least one [~~a~~] hydraulic cylinder.

14. (Currently Amended) The calender of claim 10, wherein each of said plural actuator means is positioned [~~are adapted to function~~] between said mounts of said adjacent rolls [~~forming said nips~~].

15. (Currently Amended) The calender of claim 11, wherein each of said plural actuator means is positioned [~~are adapted to function~~] between said mounts of said adjacent rolls [~~forming said nips~~].

16. (Currently Amended) The calender of claim 12, wherein each of said plural actuator means is positioned [~~are adapted to function~~] between said mounts of said adjacent rolls [~~forming said nips~~].

17. (Currently Amended) The calender of claim 13, wherein each of said plural actuator means is positioned [~~are adapted to function~~] between said mounts of said adjacent rolls [~~forming said nips~~].

18. (Currently Amended) The calender of claim 10, wherein each of said plural actuator means is positioned [~~are adapted to function~~] between said bearing blocks of said adjacent rolls [~~forming said nips~~].

19. (Currently Amended) The calender of claim 11, wherein each of said plural actuator means is positioned [~~are adapted to function~~] between said bearing blocks of said adjacent rolls [~~forming said nips~~].

20. (Currently Amended) The calender of claim 12, wherein each of said plural actuator means is positioned [~~are adapted to function~~] between said bearing blocks of said adjacent rolls [~~forming said nips~~].

21. (Currently Amended) The calender of claim 13, wherein each of said plural actuator means is positioned [~~are adapted to function~~] between said bearing blocks of said adjacent rolls [~~forming said nips~~].

22. (Currently Amended) The calender of claim 10 [~~14~~], wherein said plural actuator means are located [~~adapted to function~~] between said bearing blocks and said mounts of said adjacent rolls [~~forming said nips~~].

23. (Currently Amended) The calender of claim 11 [~~15~~], wherein said plural actuator means are located [~~adapted to function~~] between said bearing blocks and said mounts of said adjacent rolls [~~forming said nips~~].

24. (Currently Amended) The calender of claim 12 [~~16~~], wherein said plural actuator means are located [~~adapted to function~~] between said bearing blocks and said mounts of said adjacent rolls [~~forming said nips~~].

25. (Currently Amended) The calender of claim 13 [~~17~~], wherein said plural actuator means are located [~~adapted to function~~] between said bearing blocks and said mounts of said adjacent rolls [~~forming said nips~~].

26. (Currently Amended) The calender of claim 12, wherein a cylinder portion of said at least one hydraulic cylinder[~~s~~] and any hydraulic channels thereof are formed in said mounts.

27. (Currently Amended) The calender of claim 13, wherein a cylinder portion of said at least one hydraulic cylinder[~~s~~] and any hydraulic channels thereof are formed in said mounts.

28. (Currently Amended) The calender of claim 12, wherein a cylinder portion of said at least one hydraulic cylinder[*] and any hydraulic channels thereof are formed in said bearing blocks.

29. (Currently Amended) The calender of claim 13, wherein a cylinder portion of said at least one hydraulic cylinder[*] and any hydraulic channels thereof are formed in said bearing blocks.

30. (Currently Amended) The calender of claim 12 [~~26~~], wherein a cylinder portion of said at least one hydraulic cylinder[*] and any hydraulic channels thereof are formed in said mounts and said bearing blocks.

31. (Currently Amended) The calender of claim 13 [~~27~~], wherein a cylinder portion of said at least one hydraulic cylinder[*] and any hydraulic channels thereof are formed in said mounts and said bearing blocks.

32. (Currently Amended) A method for calendering a web of paper or board comprising the steps of:

passing a web to be calendered via nips formed by a top variable-crown roll, a bottom variable-crown roll, and at least one intermediate roll [~~at least one intermediate roll being~~] positioned between said top roll and said bottom roll, wherein said top roll, said bottom roll and said at least one intermediate roll are [~~being~~] disposed in a vertical stack such that the rolls may be brought into nip contact with adjacent rolls to form a nip during calendering, and wherein said rolls are [~~being~~] mounted in bearing blocks, and the bearing blocks of the at least one intermediate roll are [~~being~~] slidably connected to a frame by mounts; and

relieving linear [~~nip~~] loading of a nip with an actuator means, wherein said linear loading is caused [~~imposed~~] by the weight of [~~said~~] the rolls and auxiliary means located above said actuator means in said vertical stack, [~~with an~~] wherein said actuator means is

positioned between at least one of said mounts and said bearing blocks of the two adjacent rolls forming said nip, and wherein said [the] auxiliary means comprises [comprising] the bearing blocks, the mounts and any other [the] actuator means.

33. (Currently Amended) The method of claim 32, wherein the actuator means ~~[are operable to accomplish]~~ at least substantially completely ~~[relief of]~~ relieves the nip loading caused [imposed] by the weight of said [intermediate] rolls and the auxiliary means located above said actuator means in said vertical stack [connected thereto].

34. (New) The calender of claim 10, wherein a bearing block of at least one of the top or the bottom variable-crown roll is either solidly connected to the frame or slidably connected to the guides in the frame.

35. (New) The calender of claim 10, further comprising:
a mount to which the bearing block of either the top or the bottom variable-crown roll is connected.

36. (New) The calender of claim 35, wherein the mount of either the top or the bottom variable-crown roll is either solidly connected to the frame or slidably connected to the guides in the frame:

37. (New) The calender of claim 10, further comprising:
a top loading cylinder connected to said frame and to either a bearing block or a mount of the top variable crown roll, wherein said top loading cylinder imposes loading forces on the top variable crown roll thereby helping to adjust the load pressures on the nips.

38. (New) The calender of claim 10, further comprising:

a bottom loading cylinder connected to said frame and to either a bearing block or a mount of the bottom variable crown roll, wherein said bottom loading cylinder imposes loading forces on the bottom variable crown roll thereby helping to adjust the load pressures on the nips.

39. (New) The calender of claim 10, further comprising:

a top loading cylinder connected to said frame and to either a bearing block or a mount of the top variable crown roll, wherein said top loading cylinder imposes loading forces on the top variable crown roll thereby helping to adjust the load pressures on the nips; and

a bottom loading cylinder connected to said frame and to either a bearing block or a mount of the bottom variable crown roll, wherein said bottom loading cylinder imposes loading forces on the bottom variable crown roll thereby helping to adjust the load pressures on the nips.

40. (New) The calender of claim 11, wherein at least one of the spring constant and the length of said spring is selected such that said spring can support the weight of the rolls, bearing blocks, mounts, and any other actuator means located above said spring in said vertical stack.

41. (New) The calender of claim 11, wherein said spring comprises a stack of cup springs, wherein the number of cup springs in said stack of cup springs is selected such that said stack of cup springs can support the weight of the rolls, bearing blocks, mounts, and any other actuator means located above said stack of cup springs in said vertical stack.

42. (New) The calender of claim 10, wherein said plurality of actuator means comprises:

a top spring positioned between said top variable-crown roll and an intermediate roll adjacent to said variable-crown roll in said vertical stack;

at least one intermediate spring positioned between two adjacent intermediate rolls in said vertical stack; and

a bottom spring positioned between said bottom variable-crown roll and an intermediate roll adjacent to said bottom variable-crown roll in said vertical stack;
wherein said top, at least one intermediate, and bottom springs are constructed such that each spring can support the weight of the rolls, bearing blocks, mounts, and any other springs located above said spring in said vertical stack.

43. (New) The calender of claim 42, wherein at least one of the spring constant and the length of each of the springs is adapted so that each spring can support the weight of the rolls, bearing blocks, mounts, and any other springs located above said spring in said vertical stack.

44. (New) The calender of claim 43, wherein the spring constants of the springs vary inversely with the height of each spring within said vertical stack, such that said bottom spring has the highest spring constant and said top spring has the lowest spring constant.

45. (New) The calender of claim 43, wherein the dimensions of the springs vary directly with each spring's height within said vertical stack, such that said bottom spring has the shortest working travel and said top spring has the highest working travel.

46. (New) The calender of claim 43, wherein each of said top, at least one intermediate, and bottom springs is constructed using progressive springs in which the spring constant changes with the travel.

47. (New) The calender of claim 43, wherein each of said top, at least one intermediate, and bottom springs is dimensioned so as to make all the nips close simultaneously when loading is applied.

48. (New) The calender of claim 43, wherein each of said top, at least one intermediate, and bottom springs has some degree of overcompressibility to prevent them from bottoming during loading.

49. (New) The calender of claim 42, wherein at least one spring of said top, at least one intermediate, and bottom springs comprises a stack of cup springs, wherein the number of cup springs in said stack of cup springs is selected such that said stack of cup springs can support the weight of the rolls, bearing blocks, mounts, and any other springs located above said stack of cup springs in said vertical stack.

50. (New) The method of claim 32, further comprising the step of:

quickly opening at least one calender nip by removing loading imposed by a loading cylinder, wherein said loading cylinder is connected to said frame and to either a bearing block or a mount of one of the top variable-crown roll or the bottom variable crown roll.

51. (New) The method of claim 50, wherein all calender nips are opened in said step of quickly opening at least one calender nip.

52. (New) The method of claim 32, further comprising the step of:

quickly opening at least one calender nip by removing loading imposed by at least one of a top loading cylinder and a bottom loading cylinder, wherein said top loading cylinder is connected to said frame and to either a bearing block or a mount of the top variable crown roll and said bottom loading cylinder is connected to said frame and to either a bearing block or a mount of the bottom variable crown roll.

53. (New) The method of claim 52, wherein all calender nips are opened in said step of quickly opening at least one calender nip.

54. (New) The method of claim 32, further comprising the step of:

c8 affecting a degree of single-sidedness of the calendered web by relieving the loading of at least one calender nip by a greater amount than the loading of at least one other calender nip.
